

REMARKS

In the Office Action mailed October 27, 2006, the Office Action rejected claim 1 under 35 U.S.C. § 101. The Office Action also rejected claims 1, 2, 5, 8 and 9 under 35 U.S.C. § 112. Further, the Office Action rejected claims 1-9 under 35 U.S.C. § 102. Claims 1, 2, 5, 8 and 9 have been amended.

Applicants respectfully respond to this Office Action.

I. Claim 1 Rejected under 35 U.S.C. § 101

The Office Action rejected claim 1 under 35 U.S.C. § 101 as claiming non-statutory subject matter. Claim 1 has been amended per the suggestion of the Office Action. Applicants respectfully request that this rejection be withdrawn.

II. Claims 1, 2, 5, 8 and 9 Rejected under 35 U.S.C. § 112

The Office Action rejected claims 1, 2, 5, 8 and 9 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. The Office Action asserted that the terms or phrases “favorable”, “not favorable” and “unfavorable” in claims 1, 5, 8 and 9 were indefinite because the specification did not clearly define them. The Office Action also asserted that the phrase “velocity estimate” in claim 2 was indefinite. See Office Action pages 3-4. As a result of this paper, these claims have been amended to address these rejections. Withdrawal of these rejections is respectfully requested.

III. Claims 1-9 Rejected under 35 U.S.C. § 102

The Office Action rejected claims 1-9 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 7,116,944 to Das et al. (hereinafter, “Das”). This rejection is respectfully traversed.

“A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” M.P.E.P. § 2131 (Aug. 2001) (quoting Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d

1051, 1053 (Fed. Cir. 1987)). “The identical invention must be shown in as complete detail as is contained in the . . . claim.” Id. (quoting Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989)). In addition, “the reference must be enabling and describe the applicant’s claimed invention sufficiently to have placed it in possession of a person of ordinary skill in the field of the invention.” In re Paulsen, 30 F.3d 1475, 1479, 31 USPQ2d 1671, 1673 (Fed. Cir. 1994).

Applicants respectfully submit that the claims at issue are patentably distinct from Das. Das does not disclose all of the limitations in these claims.

The Office Action asserts that the claim element “determining a channel quality value associated with a transmission channel” is disclosed by the “channel quality estimator, item 126 of Fig 1” of Das. See Office Action, page 5. Das discloses that “[t]he channel quality estimator 126 may calculate a channel quality information.” Das, col. 5, lines 8-9. Thus, according to the Office Action, Das discloses “a channel quality value” by disclosing “a channel quality information.”

Claim 1 recites “if the transmission channel condition is favorable, then transmitting the channel quality value over one slot.” Das does not disclose this claim element. The Office Action asserts that Das discloses this claim element by disclosing “with few CQI/ACI bits in common time slot.” See Office Action, page 5. However, Applicants cannot find, and the Office Action has failed to point to, where Das discloses “transmitting the channel quality value over one slot.”

As previously stated, the Office Action has asserted that “the channel quality value” is disclosed by Das as “channel quality information.” See Office Action, page 5. Das discloses “a feedback message containing channel quality information (CQI) or antenna control information (ACI).” Das, col. 5, lines 37-39. Das does not disclose that CQI and ACI are the same value. Rather, Das states:

In further contrast with the prior art, for some embodiments of the present invention, the same feedback channel 134 may be used to feedback both ACI and CQI. As will be discussed in greater detail below, if a common feedback channel is used, for a given set of time slots used for transmitting the feedback message, whether the feedback message contains CQI or ACI may be determined by a variety of algorithms.

Das, col. 6, lines 16-23.

As mentioned previously, the Office Action has failed to point to where Das discloses “if the transmission channel condition is favorable, then transmitting the channel quality value over one slot.” Das discloses “the CQI and ACI may be transmitted in the same FBI field (e.g., transmitted in an agreed upon set of time slots) of the feedback channel.” Das, col. 6, lines 55-57. However, an agreed upon set of time slots does not disclose “if the transmission channel condition is favorable . . . transmitting . . . over one slot.” The cited passage of Das makes no disclosure as to how the agreed upon set of time slots is determined, let alone transmitting the channel quality value over one slot “if the transmission channel condition is favorable.”

In addition, claim 1 recites “transmitting the channel quality value over one slot of the channel quality feedback channel.” Das does not disclose this claim element. Instead, Das states:

The operations 200 begin at step 202, for example, when the base station 110 transmits a signal or signals to the mobile station 120. The operations 200 may be entered in step 202 with every transmission (e.g., within a time slot) from the base station 110, or periodically, for example, every N time slots, where N may correspond to a transmission time interval (TTI) or may be otherwise predetermined, for example, depending on how often feedback is desired.

Das, col. 4, lines 58-65.

Entering the operations “with every transmission (e.g., within a time slot) from the base station” does not disclose “transmitting the channel quality value over one slot of the channel quality feedback channel.” In the above provided passage, Das discloses entering the operations with every transmission from the base station. However, transmissions from the base station [to the mobile station] does not disclose “transmitting the channel quality value over one slot of the channel quality feedback channel.” Regarding feedback, Das discloses “feedback [is transmitted] from a mobile station [to a base station].” Das, col. 3, line 3 and “the mobile station 120 transmits the feedback message to the base station.” Das, col. 6, lines 24-25. Thus, Das itself discloses feedback as going from the mobile station to the base station. The above cited passage (Das, col. 4, lines 58-65) is not describing transmissions from the mobile station to the base station, and, as a result, is not disclosing a “feedback channel” as claimed. The above cited passage of Das does not disclose “transmitting . . . over one slot of the channel quality feedback channel” because Das discloses “transmission . . . from the base station.”

In view of the foregoing, Applicants respectfully submit that claim 1 is patentably distinct from Das. Accordingly, Applicants respectfully request that the rejection of claim 1 be withdrawn.

Claims 2-4 depend directly from claim 1. Accordingly, Applicants respectfully request that the rejection of claims 2-4 be withdrawn for at least the same reasons as those presented above in connection with claim 1.

Claim 5 recites “if the condition of the transmission channel is favorable, then transmitting the channel quality value over one slot.” Das does not disclose this claim element. The Office Action asserts that Das discloses this claim element by disclosing “with few CQI/ACI bits in common time slot.” See Office Action, page 5. However, Applicants cannot find, and the Office Action has failed to point to, where Das discloses “transmitting the channel quality value over one slot.”

As previously stated, the Office Action has asserted that “the channel quality value” is disclosed by Das as “channel quality information.” See Office Action, page 5. Das discloses “a feedback message containing channel quality information (CQI) or antenna control information (ACI).” Das, col. 5, lines 37-39. Das does not disclose that CQI and ACI are the same value. Rather, Das states:

In further contrast with the prior art, for some embodiments of the present invention, the same feedback channel 134 may be used to feedback both ACI and CQI. As will be discussed in greater detail below, if a common feedback channel is used, for a given set of time slots used for transmitting the feedback message, whether the feedback message contains CQI or ACI may be determined by a variety of algorithms.

Das, col. 6, lines 16-23.

As mentioned previously, the Office Action has failed to point to where Das discloses “if the condition of the transmission channel is favorable, then transmitting the channel quality value over one slot.” Das discloses “the CQI and ACI may be transmitted in the same FBI field (e.g., transmitted in an agreed upon set of time slots) of the feedback channel.” Das, col. 6, lines 55-57. However, an agreed upon set of time slots does not disclose “if the condition of the transmission channel is favorable . . . transmitting . . . over one slot.” The cited passage of Das makes no disclosure as to how the agreed upon set of time slots is determined, let alone

transmitting the channel quality value over one slot “if the condition of the transmission channel is favorable.”

In addition, claim 1 recites “transmitting the channel quality value over one slot of a feedback channel.” Das does not disclose this claim element. Instead, Das states:

The operations 200 begin at step 202, for example, when the base station 110 transmits a signal or signals to the mobile station 120. The operations 200 may be entered in step 202 with every transmission (e.g., within a time slot) from the base station 110, or periodically, for example, every N time slots, where N may correspond to a transmission time interval (TTI) or may be otherwise predetermined, for example, depending on how often feedback is desired.

Das, col. 4, lines 58-65.

Entering the operations “with every transmission (e.g., within a time slot) from the base station” does not disclose “transmitting the channel quality value over one slot of a feedback channel.” In the above provided passage, Das discloses entering the operations with every transmission from the base station. However, transmissions from the base station [to the mobile station] does not disclose “transmitting the channel quality value over one slot of a feedback channel.” Regarding feedback, Das discloses “feedback [is transmitted] from a mobile station [to a base station].” Das, col. 3, line 3 and “the mobile station 120 transmits the feedback message to the base station.” Das, col. 6, lines 24-25. Thus, Das itself discloses feedback as going from the mobile station to the base station. The above cited passage (Das, col. 4, lines 58-65) is not describing transmissions from the mobile station to the base station, and, as a result, is not disclosing a “feedback channel” as claimed. The above cited passage of Das does not disclose “transmitting . . . over one slot of the channel quality feedback channel” because Das discloses “transmission . . . from the base station.”

In view of the foregoing, Applicants respectfully submit that claim 5 is patentably distinct from Das. Accordingly, Applicants respectfully request that the rejection of claim 5 be withdrawn.

Claims 6-7 depend directly from claim 5. Accordingly, Applicants respectfully request that the rejection of claims 6-7 be withdrawn for at least the same reasons as those presented above in connection with claim 5.

Claim 8 recites “if the condition of the channel is unfavorable, then transmitting a control signal to the remote station, wherein the control signal triggers a reduced rate mode for transmitting the channel quality value of a feedback channel from the remote station.” Das does not disclose this claim element. The Office Action asserts that Das discloses “the control signal” as the pilot signal. See Office Action, page 6. However, the Office Action has failed to identify where Das discloses “the control signal triggers a reduced rate mode for transmitting the channel quality value of a feedback channel from the remote station.” See Office Action, page 6.

Das states “[t]he mobile station 120 may select an antenna for transmission based on pilot signals received from the two antennas.” Das, col. 7, lines 22-24. Selecting an antenna for transmission based on pilot signals does not disclose “the control signal triggers a reduced rate mode for transmitting the channel quality value of a feedback channel from the remote station.” In this cited passage, Das merely discloses that the pilot signal is used to select an antenna for transmission. Das does not disclose that the pilot signal “triggers a reduced rate mode for transmitting the channel quality value.”

Das also states “the mobile station 720 estimates the antenna weights used by the base station 710 based on the dedicated pilot signals.” Das, col. 12, lines 21-23. Estimating the antenna weights based on the pilot signals does not disclose “the control signal triggers a reduced rate mode for transmitting the channel quality value of a feedback channel from the remote station.” Das discloses “base stations having multiple antennas use an antenna weight coefficient vector to adjust the phase and/or relative amplitude of signals transmitted from each antenna.” Das, col. 1, lines 23-26. Adjusting the phase and/or amplitude has nothing to do with “a reduced rate mode for transmitting the channel quality value of a feedback channel.”

In addition, Das states “[t]he common or dedicated pilot signals received from the base station can be appropriately filtered to determine the channel estimates to be used for demodulation.” Das, col. 12, lines 60-63. Using the pilot signals to determine the channel estimates does not disclose “the control signal triggers a reduced rate mode for transmitting the channel quality value of a feedback channel.” Here, Das discloses that the pilot signal is used for demodulation. Using the pilot signal for demodulation does not disclose “the control signal triggers a reduced rate mode for transmitting” because demodulation does not disclose “transmitting.”

In view of the foregoing, Applicants respectfully submit that claim 8 is patentably distinct from Das. Accordingly, Applicants respectfully request that the rejection of claim 8 be withdrawn.

Claim 9 recites “wherein the control signal triggers a reduced rate mode for transmitting the channel quality value over a feedback channel from the remote station.” Das does not disclose this claim element. The Office Action asserts that Das discloses “the control signal” as the pilot signal. See Office Action, page 6. However, the Office Action has failed to identify where Das discloses “the control signal triggers a reduced rate mode for transmitting the channel quality value over a feedback channel from the remote station.” See Office Action, page 6.

Das states “[t]he mobile station 120 may select an antenna for transmission based on pilot signals received from the two antennas.” Das, col. 7, lines 22-24. Selecting an antenna for transmission based on pilot signals does not disclose “the control signal triggers a reduced rate mode for transmitting the channel quality value over a feedback channel from the remote station.” In this cited passage, Das merely discloses that the pilot signal is used to select an antenna for transmission. Das does not disclose that the pilot signal “triggers a reduced rate mode for transmitting the channel quality value.”

Das also states “the mobile station 720 estimates the antenna weights used by the base station 710 based on the dedicated pilot signals.” Das, col. 12, lines 21-23. Estimating the antenna weights based on the pilot signals does not disclose “the control signal triggers a reduced rate mode for transmitting the channel quality value over a feedback channel from the remote station.” Das discloses “base stations having multiple antennas use an antenna weight coefficient vector to adjust the phase and/or relative amplitude of signals transmitted from each antenna.” Das, col. 1, lines 23-26. Adjusting the phase and/or amplitude has nothing to do with “a reduced rate mode for transmitting the channel quality value over a feedback channel.”

In addition, Das states “[t]he common or dedicated pilot signals received from the base station can be appropriately filtered to determine the channel estimates to be used for demodulation.” Das, col. 12, lines 60-63. Using the pilot signals to determine the channel estimates does not disclose “the control signal triggers a reduced rate mode for transmitting the channel quality value over a feedback channel.” Here, Das discloses that the pilot signal is used for demodulation. Using the pilot signal for demodulation does not disclose “the control signal

triggers a reduced rate mode for transmitting” because demodulation does not disclose “transmitting.”

In view of the foregoing, Applicants respectfully submit that claim 9 is patentably distinct from Das. Accordingly, Applicants respectfully request that the rejection of claim 9 be withdrawn.

REQUEST FOR ALLOWANCE

In view of the foregoing, Applicants submit that all of the pending claims in the application are patentable. Accordingly, reconsideration and allowance of this application are earnestly solicited. Should any issues remain unresolved, the Examiner is encouraged to telephone the undersigned at the number provided below.

Respectfully submitted,

Dated: 01/25/2007

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